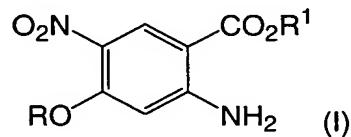


WHAT IS CLAIMED:

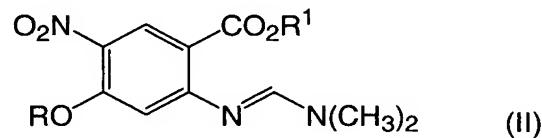
1. A process for the production of a 3-cyano-6-alkoxy-7-nitro-4-quinolone comprising:

5 a) reacting a substituted anthranilate of formula (I) with dimethylformamide dimethyl acetal:

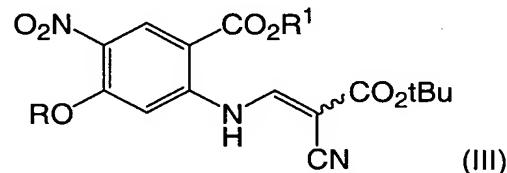


wherein R is an alkyl;

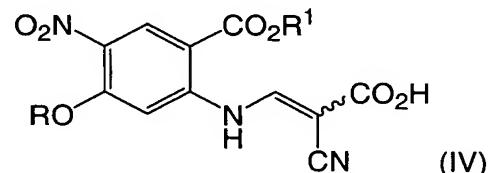
to obtain a compound of formula (II):



10 b) condensing the compound of formula (II) with t-butylcyanoacetate to obtain a compound of formula (III):

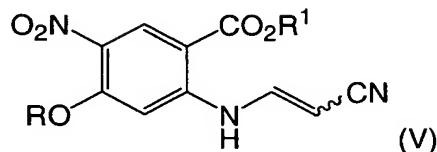


c) hydrolyzing the compound of formula (III) to yield compound of formula (IV):

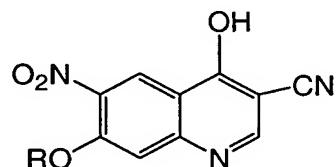


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d) decarboxylating the compound of formula (IV) to a compound of formula (V):



5 e) cyclizing the compound of formula (V) to obtain a 3-cyano-6-alkoxy-7-nitro-4-quinolone of formula:



2. The process of claim 1 wherein the reacting comprises combination of the compound of formula (I) and dimethylformamide dimethyl acetal with an alcoholic solvent at a temperature of about 50° C to about 80° C.

10 3. The process of claim 2 wherein the alcoholic solvent is t-butanol.

4. The process of claim 1 wherein the reacting occurs at about 80° C.

5. The process of claim 1 wherein in step a) the combination is cooled until the compound of formula (II) precipitates out.

15 6. The process of claim 1 wherein the dimethylformamide dimethyl acetal and anthranilate are combined without alcoholic solvent and heated to about 110° C to yield the compound of formula (II).

7. The process of claim 6 wherein the combination is diluted, filtered and dried to obtain the compound of formula (II).

20 8. The process of claim 1 wherein the dimethylformamide dimethylacetal is present in a concentration of 1 to 5 equivalents.

9. The process of claim 8 wherein the dimethylformamide dimethylacetal is present in a concentration of 1 to 2 equivalents.
10. The process of claim 9 wherein the dimethylformamide dimethylacetal is present in a concentration of 1.2 equivalents.
- 5 11. The process of any one of claim 1 wherein the condensing comprises combining the compound of formula (II), acetonitrile, an acid, toluene or alcoholic solvent to obtain a compound of formula (III) at a temperature of about 20° C to about 110° C.
- 10 12. The process of claim 11 wherein the acid comprises acetic acid, trifluoroacetic acid, p-toluene sulfonic acid, methanesulfonic acid, or triflic acid.
13. The process of claim 12 wherein the acid comprises acetic acid.
14. The process of claim 1 wherein the condensing comprises addition of alcoholic solvent in combination with t-butylcyanoacetate at a temperature of about 25° C to about 35° C.
- 15 15. The process of claim 14 wherein the alcoholic solvent is t-butanol.
16. The process of claim 14 wherein the t-butylcyanoacetate comprises about 1.5 to about 2.0 equivalents.
17. The process of claim 1 wherein the hydrolyzing comprises addition of acid in a solvent to the compound of formula (III) at a temperature of about 20° C to about 110° C.
- 20 18. The process of claim 17 wherein the acid comprises acetic acid, trifluoroacetic acid, p-toluene sulfonic acid, methanesulfonic acid, or triflic acid.
- 25 19. The process of claim 17 wherein the solvent comprises toluene, acetonitrile, tetrahydrofuran, dimethylacetamide.

20. The process of claim 17 wherein the acid and the solvent comprises acetic acid.
21. The process of claim 17 wherein the hydrolyzing comprises addition of triflic acid in acetonitrile to the compound of formula (III) at a temperature of about 5 20° C to about 30° C.
22. The process of claim 1 wherein the decarboxylating comprises addition of an acid or base to the compound of formula (IV) in a solvent at a temperature of about 80° C to about 140° C.
23. The process of claim 22 wherein the solvent comprises toluene, acetonitrile, 10 tetrahydrofuran, dimethylacetamide, diphenylether, o-dichlorobenzene, THF/xylene mixture, dimethyl propionitrile, and isopropanol.
24. The process of claim 22 wherein the acid comprises acetic acid, trifluoroacetic acid, p-toluene sulfonic acid, methanesulfonic acid, or triflic acid.
- 15 25. The process of any one of claims 22 wherein the base comprises diisopropylethylamine, pyridine, diazobicyclo[2.2.3]undecene, sodium hydroxide, piperidine, dimethylformamide, propionitrile or isopropanol.
26. The process of claim 22 comprising addition of diazobicyclo[2.2.3]undecene and acetonitrile to the compound of formula (IV) at a temperature of about 20 80° C.
27. The process of claim 1 wherein the cyclization comprises addition of a base in a solvent to a compound of formula (V) at a temperature of about 60° C to about 140° C for about 4 to 5 hours.
28. The process of claim 27 wherein the base comprises diisopropylethylamine, 25 pyridine and diazobicyclo[2.2.3]undecene, sodium hydroxide, piperidine, dimethylformamide, propionitrile or isopropanol.

29. The process of claim 27 wherein the solvent comprises toluene, acetonitrile, tetrahydrofuran, dimethylacetamide, diphenylether, o-dichlorobenzene, THF/xylene mixture, dimethyl propionitrile, and isopropanol.
30. The process of claim 27 wherein the cyclization comprises addition of diazobicyclo[2.2.3]undecene in acetonitrile at about 80° C for about 4 to 5 hours to obtain 3-cyano-6-alkoxy-7-nitro-4-quinolone.
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31. The process of claim 30 wherein diazobicyclo[2.2.3]undecene comprises 3 to 5 equivalents.
32. The process of claim 30 wherein the 3-cyano-6-alkoxy-7-nitro-4-quinolone is isolated by quenching with aqueous HCl.
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33. The process of claim 1 wherein the hydrolysis, decarboxylation, and cyclization are performed sequentially without isolation.
34. The process of claim 33 comprising hydrolyzing the compound of formula (III) with triflic acid in acetonitrile at about 20°C to about 30°C for a maximum of 60 minutes, adding DBU and refluxing for up to 5 hours.
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